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JACKSON & CO., LLP 6114 LA SALLE AVENUE #507 OAKLAND, CA 94611-2802			BURGESS, JOSEPH D	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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### Office Action Summary

**Application No.**

10/788,635

**Applicant(s)**

KUO ET AL.

**Examiner**

JOSEPH BURGESS

**Art Unit**

4114

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02/27/2004 and 07/30/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 and 30 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date See Continuation Sheet
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Continuation of Attachment(s) 3. Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :02/27/2004,07/30/2004 09/16/2005.

**DETAILED ACTION**

***Status of Claims***

1. This action is in reply to application 10788635 filed on 02/27/2004 and subsequent preliminary amendment filed on 07/30/2004.
2. Claims 1-25 are currently pending and have been examined.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 recites "a data mining technique". All claims dependent on independent claim 1 therefore incorporate the data mining techniques recited and are rejected. Further, claim 20 recites "applying models to calculate risk", however there is only a description of what the modeler does, not how it models, equations used or the like. The specification does not provide any algorithm, process flowchart/diagram and the like to convey to one of ordinary skill in the art how to make and practice the invention. In addition, the present disclosure does not present how the invention would be practiced with conventionally constructed data mining techniques and models and therefore encompasses any and all data mining techniques and models for performing the recited function. The above recitations fail to imply the presence of any apparatus, as they fail to serve structural limitations because they are not "means" recitations subject to interpretation under 35 U.S.C. §112 sixth

paragraph, and would not have been understood in the art as implying any particular structure. Therefore, claims 1-25 are treated as encompassing any and all means for performing the recited functions. When a limitation encompasses any and all structures or acts for performing a recited function known now or in the future, including those which were not what the applicant had invented, the disclosure fails to provide a scope of enablement commensurate with the scope of the claim (*Ex parte Miyazaki*, Appeal No. 2007-3300, p. 27 (BPAI, 2008) (referencing *Halliburton Oil Well Cementing Co. v. Walker*, 329 US 1 (1946))). Here, certain limitations functionally describe results, but do not define any of the structure to specify the intended method of reaching those results. As such, the limitations are properly construed to encompass any and all means for reaching the results contained therein, not just the particular means recited in the specification. Because the disclosure does not enable every such means that reasonably falls within the scope of the limitations, the disclosure fails to provide an adequate scope of enablement as required by 35 USC 112, first paragraph.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
6. Claims 4, 14, and 16-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
7. Claim 4 recites the limitation "the sequence" in line one. There is insufficient antecedent basis for this limitation in the claim.
8. Claim 14 recites "an unsatisfactory appliance" in line one and "more than a threshold different" in line two. These are relative terms and the claim does not make clear what parameters would

make an appliance unsatisfactory or what specific threshold measurements are needed to determine if the difference is unsatisfactory.

9. Claim 16 recites "analyzing one of the intermediate tooth positions with the target position" in lines one and two. It is unclear what analysis is taking place and which intermediate tooth position is being used for the analysis.
10. Claim 17 recites "capturing characteristic tags" in line one. It is unclear what characteristic the tags need to have to be captured.
11. Claim 18 recites "rating the set of treatments based on the aggregated data" in lines two and three. It is unclear what rating method is used to rate the set of treatments would be given.
12. Claim 19 recites "comparing performance of a plurality of sets of treatments" in lines one and two. It is unclear what part of the performance would be compared for the set of treatments.
13. Claim 20 recites "applying models to calculate risk" in line one. It is unclear what type of models would be applied and how the risk would be calculated.
14. Claim 21 recites "identifying a treatment case for special handling" in lines one and two. There is insufficient antecedent basis for the term "special handling" has and it is unclear how a case would be designated for special handling and exactly what special handling entails.
15. Claim 22 recites "identifying a case for special treatment parameters including clinical constraint" in lines one and two. There is insufficient antecedent basis for the term "special treatment parameters" and it is unclear how a case would be designated for special treatment parameters and exactly what special treatment parameters entail.

16. Claim 23 recites "clusterizing clinical practitioners by practice habits" in lines one and two. It is unclear what practice habits would cause clinical practitioners to be grouped, which clinical practitioners are eligible to be grouped, and how they would be grouped.
17. Claim 24 recites "treatment parameters are adapted to preferences specific to each cluster" in lines one and two. It is unclear which treatment parameters are adapted, how they are adapted and to which preferences they are adapted.
18. Claim 25 recites "given stages" in line two. It is unclear to what stages the applicant is referring.

***Claim Rejections - 35 USC § 101***

19. 35 U.S.C. 101 reads as follows:  
  
Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.
20. Claims 1-25 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.
21. Claims 1-25 are directed to a method. This rejection is based on recent Federal Circuit decisions and Supreme Court precedent in particular, *Diamond v. Diehr*, 450 U.S. 175, 184 (1984); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876) which state that the method must:  
  
(1) be tied to another machine (such as a particular apparatus); or  
  
(2) transform underlying subject matter (such as an article or materials) to a different state or thing.

***Claim Rejections - 35 USC § 103***

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Examiner's Note:** The Examiner has pointed out particular references contained in the prior art of record within the body of this action for the convenience of the Applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply. Applicant, in preparing the response, should consider fully the entire reference as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

24. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sachdeva (US 6,540,512 B1) in view of Jordan, et al. (US 2002/0163291 A1).



**25. Claim 1:**

Sachdeva, as shown, discloses the following limitations:

- *providing a database comprising a compendium of at least one of patient treatment history; orthodontic therapies, orthodontic information and diagnostics (see at least column 5, lines 46-67, i.e. system has a database with multiple patient's orthodontic parameters);*
- *the output data stream correlating a patient malocclusion with an orthodontic treatment (see at least column 12, lines 33-56, i.e. initial treatment plan is derived from patient's malocclusion digital model and orthodontic parameters related to patient from database);*
- *applying the output data stream to improve a dental appliance or a dental appliance usage (see at least 6, line 58 – column 7, line 43, i.e. orthodontic parameters from database help orthodontic server generate treatment plan which when confirmed allows server to design orthodontic appliance).*

Sachdeva does not disclose the following limitation, but Jordan as shown does:

- *employing a data mining technique for interrogating said database for generating an output data stream (see at least paragraph 0050, i.e. database containing patient information can be searched and best matched data can be selected),*

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database and treatment methods of Sachdeva with the orthodontic data mining techniques of Jordan because it provides a less costly way to treat each patient's teeth misalignment individually as opposed to just fitting them with a standard orthodontic appliance.

**26. Claim 6:**

The combination of Sachdeva/Jordan discloses the limitations as shown in the rejections above. Furthermore, Sachdeva discloses the limitation of *the output data stream is related to clinical constraints* (see at least column 5, lines 46-67 and column 6, line 58 – column 7, line 43, i.e.

multiple patient's orthodontic parameters are retrieved from database to help form a treatment plan which includes information on tooth movements or clinical constraints).

27. Claims 2, 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sachdeva (US 6,540,512 B1) in view of Jordan, et al. (US 2002/0163291 A1) in further view of Chishti, et al. (US 5,975,893 A).

28. **Claim 2:**

The combination of Sachdeva/Jordan discloses the limitations as shown in the rejections above. The combination of Sachdeva/Jordan does not disclose the following limitation, but Chishti '893 does reveal *generating a plurality of appliances having geometries selected to progressively reposition the teeth, wherein the appliances comprise polymeric shells having cavities and wherein the cavities of successive shells have different geometries shaped to receive and resiliently reposition teeth from one arrangement to a successive arrangement* (see at least column 2, line 62 – column 3, line 31). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the progressive orthodontic appliances of Chishti '893 because they reduce the time required by the orthodontist to oversee patients and allow for a more economical, less visible, more comfortable, less infection-prone orthodontic solution for patients.

29. **Claim 13:**

The combination of Sachdeva/Jordan/Chishti '893 discloses the limitations as shown in the rejections above. Furthermore, Chishti '893 discloses the limitation of *the last of the sequence of appliances is a positioner for finishing and maintaining teeth positions* (see at least column 8, lines 41-54). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of

Sachdeva/Jordan with the positioner of Chishti '893 because they allow for a more economical, less visible, more comfortable, less infection-prone orthodontic solution for patients.

**30. Claim 15:**

The combination of Sachdeva/Jordan/Chishti '893 discloses the limitations as shown in the rejections above. Furthermore, Chishti '893 discloses the limitation of *capturing at least an initial tooth position, a target tooth position; and one or more intermediate tooth positions* (see at least column 6, lines 12-37, i.e. digital data sets of an initial tooth arrangement, final tooth arrangement, and several intermediate stages of tooth arrangements in between are provided). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the data sets of successive tooth positions of Chishti '893 because it would provide a more complete data set with which to use data mining techniques.

**31. Claim 16:**

The combination of Sachdeva/Jordan/Chishti '893 discloses the limitations as shown in the rejections above. Furthermore, Chishti '893 discloses the limitation of *analyzing one of the intermediate tooth positions with the target position* (see at least column 13, lines 27-44, i.e. software analyzes intermediate positions linearly to get to target position). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the analysis of successive tooth positions of Chishti '893 because it would provide a more complete data set with which to use data mining techniques.

**32. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sachdeva (US 6,540,512 B1) in view of Jordan, et al. (US 2002/0163291 A1) in further view of Chishti, et al. (US 5,975,893 A) in further view of Chishti, et al. (US 6,471,511 B1).**

**33. Claim 3:**

The combination of Sachdeva/Jordan/Chishti '893 discloses the limitations as shown in the rejections above. The combination of Sachdeva/Jordan/Chishti '893 does not disclose the following limitation, but Chishti '511 does reveal *the sequence of appliances includes a sequence of configurations of braces, the braces including brackets and archwires* (see at least column 2, lines 1-13). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan/Chishti '893 with the progressive braces of Chishti '511 because they have been the standard orthodontic appliance of choice for many years.

**34. Claim 4:**

The combination of Sachdeva/Jordan/Chishti '893/Chishti '511 discloses the limitations as shown in the rejections above. Furthermore, Chishti '511 discloses the limitation of *the sequence of appliances includes a sequence of polymeric shells manufactured by fitting polymeric sheets over positive models corresponding to the teeth of the patient* (see at least column 2, lines 1-15 and column 9, lines 52-54). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan/Chishti '893 with the progressive polymeric shells of Chishti '511 because they allow for a more economical, less visible, more comfortable, less infection-prone orthodontic solution for patients.

- 35.** Claims 5, 7-12, 14, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sachdeva (US 6,540,512 B1) in view of Jordan, et al. (US 2002/0163291 A1) in further view of Chishti, et al. (US 6,471,511 B1).

**36. Claim 5:**

The combination of Sachdeva/Jordan discloses the limitations as shown in the rejections above. The combination of Sachdeva/Jordan does not disclose the following limitation, but Chishti '511 does reveal *the sequence of appliances includes a sequence of polymeric shells manufactured by stereo lithography from digital models* (see at least column 2, lines 1-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the progressive polymeric shells manufactured by stereo lithography of Chishti '511 because it allows for a more economical and efficient way to make the orthodontic appliances.

**37. Claim 7:**

The combination of Sachdeva/Jordan/Chishti '511 discloses the limitations as shown in the rejections above. Furthermore, Chishti '511 discloses the limitation of *the clinical constraints include a maximum rate of displacement of a tooth, a maximum force on a tooth, and a desired end position of a tooth* (see at least column 2, lines 30-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the clinical constraints of Chishti '511 because it provides definable, measurable quantities to tooth movement.

**38. Claim 8:**

The combination of Sachdeva/Jordan/Chishti '511 discloses the limitations as shown in the rejections above. Furthermore, Chishti '511 discloses the limitation of *the maximum force is a linear force or a torsional force* (see at least column 2, lines 33-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the maximum force definition of Chishti '511 because it provides definable, measurable quantities to tooth movement.

**39. Claim 9:**

The combination of Sachdeva/Jordan/Chishti '511 discloses the limitations as shown in the rejections above. Furthermore, Chishti '511 discloses the limitation of *the maximum rate of displacement is a linear or a angular rate of displacement* (see at least column 2, lines 34-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the maximum rate of displacement definition of Chishti '511 because it provides definable, measurable quantities to tooth movement.

**40. Claim 10:**

The combination of Sachdeva/Jordan/Chishti '511 discloses the limitations as shown in the rejections above. Furthermore, Chishti '511 discloses the limitation of *the clinical constraints include a maximum rate of displacement of a tooth* (see at least column 2, lines 30-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the clinical constraints of Chishti '511 because it provides definable, measurable quantities to tooth movement.

**41. Claim 11:**

The combination of Sachdeva/Jordan/Chishti '511 discloses the limitations as shown in the rejections above. Furthermore, Chishti '511 discloses the limitation of *the clinical constraints include a maximum rate of linear displacement of a tooth* (see at least column 2, lines 30-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the clinical constraints of Chishti '511 because it provides definable, measurable quantities to tooth movement.

**42. Claim 12:**

The combination of Sachdeva/Jordan/Chishti '511 discloses the limitations as shown in the rejections above. Furthermore, Chishti '511 discloses the limitation of *the clinical constraints include a maximum rate of rotational displacement of a tooth* (see at least column 2, lines 30-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the clinical constraints of Chishti '511 because it provides definable, measurable quantities to tooth movement.

**43. Claim 14:**

The combination of Sachdeva/Jordan/Chishti '511 discloses the limitations as shown in the rejections above. Furthermore, Chishti '511 as shown discloses the following limitations:

- *comparing an actual effect of the appliances with an intended effect of the appliances* (see at least column 2, lines 15-17);
- *identifying an appliance as an unsatisfactory appliance if the actual effect of the appliance is more than a threshold different from the intended effect of the appliance and modifying a model of the unsatisfactory appliance according to the results of the comparison* (see at least column 2, lines 17-21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the identification of unsatisfactory orthodontic appliances technique of Chishti '511 because it allows for correction of orthodontic appliances that are not adjusting the patient's teeth correctly.

**44. Claim 25:**

The combination of Sachdeva/Jordan/Chishti '511 discloses the limitations as shown in the rejections above. Furthermore, Chishti '511 discloses the limitation of *applying probabilistic*

*models to predict discrepancies between targeted and actual tooth position at given stages in treatment, and where said predictions are calculated into treatment plans* (see at least column 2, lines 1-57, i.e. digital finite element models are applied to orthodontic appliances and patient's teeth to predict the effect aligners will have on targeted and actual teeth positions and adjustments to treatment plan are made accordingly). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the technique of applying predictive models of Chishti '511 because it allows for a more refined treatment plan and does not require the patient to visit the orthodontist as often.

45. Claims 17-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sachdeva (US 6,540,512 B1) in view of Jordan, et al. (US 2002/0163291 A1) in further view of Official Notice.

46. **Claim 17:**

The combination of Sachdeva/Jordan fails to explicitly disclose *capturing characteristics tags associated with a patient case to label captured data*. However, the examiner takes Official Notice that is old and well known in the art to apply tags to data and capture data based on those tags. Therefore, it would have been obvious to one of ordinary skill in the art to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the ability to tag data and capture data based on those tags. The reason to combine the ability to capture tagged data to the mined orthodontic data would be to determine which patient cases are relevant to the search being executed. This combination provides a predictable result because it is well known to capture tagged data after it is labeled.

47. **Claim 18:**

The combination of Sachdeva/Jordan fails to explicitly disclose *aggregating data of a set of treatments based on their tags and rating the set of treatments based on the aggregated data*.



However, the examiner takes Official Notice that is old and well known in the art to aggregate data and rate that aggregated data. Therefore, it would have been obvious to one of ordinary skill in the art to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the ability to collect tagged data and rate that data based on groupings. The reason to combine the ability to aggregate and rate data to the mined orthodontic data would be to determine which treatment is best for the patient. This combination provides a predictable result because it is well known to rate data that is collected.

**48. Claim 19:**

The combination of Sachdeva/Jordan fails to explicitly disclose *comparing performance of a plurality of sets of treatments*. However, the examiner takes Official Notice that is old and well known in the art to compare performance of different treatments. Therefore, it would have been obvious to one of ordinary skill in the art to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the ability to compare performance of different treatments. The reason to combine the ability to compare performance of different treatments to the mined orthodontic data would be to determine which treatment is best for the patient. This combination provides a predictable result because it is well known to compare performance of different treatments.

**49. Claim 20:**

The combination of Sachdeva/Jordan fails to explicitly disclose *applying models to calculate risk of treatment complications for individual patients*. However, the examiner takes Official Notice that is old and well known in the art to apply a model to calculate risk. Therefore, it would have been obvious to one of ordinary skill in the art to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with a model to calculate the risk of those methods for the purpose of determining the most likely complications arising from orthodontic treatment. The reason to combine the risk model to the mined orthodontic data would be to determine the

riskiest data points, which in this instance would be the most difficult cases. This combination provides a predictable result because it is well known that risk models determine risk.

**50. Claim 21:**

The combination of Sachdeva/Jordan fails to explicitly disclose *identifying a treatment case for special handling*. However, the examiner takes Official Notice that is old and well known in the art to recognize cases that require special attention. Therefore, it would have been obvious to one of ordinary skill in the art to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the ability to identify a case for special handling. The reason to combine the discovery of special cases with the mined orthodontic data would be to determine which cases need extra attention. This combination provides a predictable result because it is well known to identify special cases.

**51. Claim 22:**

The combination of Sachdeva/Jordan fails to explicitly disclose *identifying a treatment case for special treatment parameters including clinical constraint*. However, the examiner takes Official Notice that is old and well known in the art to recognize cases that require special attention. Therefore, it would have been obvious to one of ordinary skill in the art to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the ability to identify a case for special treatment. The reason to combine the discovery of special treatment cases with the mined orthodontic data would be to determine which cases need extra attention. This combination provides a predictable result because it is well known to identify special cases.

**52. Claim 23:**

The combination of Sachdeva/Jordan fails to explicitly disclose *clusterizing clinical practitioners by practice habits*. However, the examiner takes Official Notice that is old and well known in the art to group doctors by what they practice. Therefore, it would have been obvious to one of

ordinary skill in the art to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the ability to identify practitioners by their practicing inclinations. The reason to combine the grouping of clinical practitioners with the mined orthodontic data would be to determine which practitioners have cases that can be helped by certain appliances. This combination provides a predictable result because it is well known to group practitioners by the way they practice.

**53. Claim 24:**

The combination of Sachdeva/Jordan fails to explicitly disclose *treatment parameters are adapted to preferences specific to each cluster*. However, the examiner takes Official Notice that is old and well known in the art to adapt a patient's treatment according to the practice style of a group of doctors. Therefore, it would have been obvious to one of ordinary skill in the art to combine the orthodontic database, data mining, and treatment methods of Sachdeva/Jordan with the ability to adjust treatment parameters. The reason to combine the adjusting of treatment factors with the mined orthodontic data would be to use treatment options that are known to work with certain practicing styles of orthodontists. This combination provides a predictable result because it is well known to adjust a patient's treatment according to how a doctor practices.

***Conclusion***

This prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Andreiko, et al. (US 6,616,444 B2)
- Choi, et al. (US 2005/0003318 A1)
- Graham (US 6,790,036 B2)
- Hofmann, et al. (US 2002/0107853 A1)
- Lang, et al. (US 2002/0114425 A1)
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Any inquiry of a general nature or relating to the status of this application or concerning this communication or earlier communications from the Examiner should be directed to **JOSEPH BURGESS** whose telephone number is **(571)270-5547**. The Examiner can normally be reached on Monday-Friday, 9:30am-5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, **JAMES REAGAN** can be reached at **(571)272-6710**.

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